# DESKTOP CATAPULT

Since city ordinances (among other things) won't allow us to build a full-scale Medieval catapult, we had to scale it down a bit. Despite the setbacks, we've come up with a pretty sweet, indoor-safe Desktop Catapult. And the best part is that everything you're going to need can be found right in your home. The Desktop Catapult makes for a fun way to explore the properties of physics and motion.

MATERIALS

* Staple remover
* Solid, flat base (we found that a 3-ring binder works great)
* Plastic spoon
* Hot glue gun or tape
* Catapult-able objects

# EXPERIMENT

1. Apply an ample amount of hot glue to the bottom (wider claw) of the staple remover. Press and hold the staple remover against your base. (If you are using tape, make sure that you have the staple remover secured to the base.)
2. Apply a strip of glue to the top side of the staple remover and press the spoon onto the top of the remover. The end of the spoon handle should be lined up with the non-clawed end of the staple remover. Be sure that the spoon is secured to the top of the staple remover. (Again, if you are using tape, make sure the spoon won't be able to break free.)
3. You're ready to launch! Put an object like a tin foil ball or a small piece of candy in the bowl of the spoon.
4. Gently pull downward on the bowl of the spoon. Make sure not to get in the way your projectile.
5. Let it rip!

# HOW DOES IT WORK?

Sure, making and using a catapult is a ton of fun, but do you understand how and why it works?

Let's start off with a little history behind the catapult. During the Medieval Era, entire cities would be surrounded by seemingly impenetrable walls. These walls could be extremely tall and extremely thick - too tall to climb and too hard to break through. So some crafty scientists devised a way to launch projectiles OVER the wall. If they could attack from the outside, they didn't need to get over or through the wall.

So how did they come up with this clever instrument? Well, the catapult is actually a couple of simple ideas combined into one complex machine. By combining a simple machine, the lever, with a spring and another lever, you've got a catapult.

The first lever in our Desktop Catapult is the staple remover. The fulcrum is at the end opposite of the claws. The spring makes the staple remover snap open when you release it. Finally, the second lever is the spoon, which has its fulcrum where it touches the staple remover. Pretty cool, right?